



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

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## AD HOC ADVISORY COMMITTEE MEETING SUMMARY

### *Aquaculture Enhancement Areas*

*March 18, 2008*

### Welcome and Introductions

#### Advisory Committee Members:

**Agriculture/Farming:** David Hickman, Butch Nottingham, Jane Corson-Lassiter

**Aquaculture Industry:** Robert Bloxom, Andy Drewer, Mike Peirson, Pete Terry, John West

**Development/Real Estate:** Ralph Dodd, Ace Seybolt

**Environmental:** Chris Moore (Chesapeake Bay Foundation), John Chubb (Citizens for a Better Eastern Shore), Steve Parker (Nature Conservancy)

**General Interests:** Rusty Gowen

**Localities and Towns:** Tom Bonadeo, Terry Long, Elaine Meil, Robert Ritter

#### Staff Present to Assist TAC:

**VA Department of Environmental Quality (DEQ):** Ellen Gilinsky, Alan Pollock, Jim McConathy, Elleanore Daub, Valerie Rourke (Water Programs), Laura McKay (Coastal Zone Management), Vijay Satyal, Jackie Rickards (Economic Impacts)

**VA Department of Health (VDH):** Bob Croonenberghs, Keith Skiles (Shellfish Sanitation); Don Alexander (On-Site Sewer and Water)

**VA Department of Conservation and Recreation (DCR):** Arthur Kirby

### Purpose:

The purpose of this Technical Advisory Committee (TAC) is to provide DEQ with advice on developing a proposal to enhance protection of aquaculture waters. There are no votes taken, the overall approach is to arrive at consensus although that does not always happen. Staff will share a summary of the TAC discussions with the State Water Control Board when they review the draft regulation. The purpose of this first meeting was informational; at the next meeting we will get more into the details of alternatives to enhance aquaculture and how to incorporate those ideas into regulation.

### Background:

Elleanore Daub (DEQ) provided a background on the rulemaking. Important points are that this initiative is at the direction of Governor Kaine, it supports other initiatives in the Coastal Zone Management Program and is timely given recent conflicts between development and aquaculture on the Eastern Shore. The Notice of Intended Regulatory Action (NOIRA) that was published last year (comment period ended November 30, 2007) provided several suggested alternatives to enhance aquaculture. These included new designations of "Aquaculture Enhancement Areas" with a corresponding requirement that would require applicants for point source dischargers to

demonstrate that practicable alternatives to discharging pollutants to the listed waters have been evaluated and that the proposed discharge is the alternative that produces the least environmental impact. Another suggestion in the NOIRA was to provide flexibility in the alternatives analysis procedure. It is also anticipated that existing sections of the Water Quality Standards that deal with shellfish will need clarification. The details of the requirements will be discussed by the TAC and new ideas to protect and enhance shellfish aquaculture may arise during the TAC process. A summary of the NOIRA comments and the schedule of rulemaking were presented.

**Discussion:**

Enforcement of these requirements would be by the Department of Environmental Quality (DEQ), likely through the permit process for wastewater discharges to state waters. Several members of the TAC expressed concerns over storm water run off (impervious land flow), as well as the impact the freshwater component of a sewage discharge (rather than its pollutant content) can have on clam aquaculture. It was clarified that the action under consideration is a DEQ regulation and that DCR regulates municipal storm water and construction storm water and would therefore have to deal with those issues separately. DEQ does regulate industrial storm water, as identified by Standard Industrial Classifications (SIC) codes. The TAC will be sent a list of industrial storm water SIC codes. Industrial storm water permitting does not include feedlots or other animal rearing activities. These are regulated by another DEQ program called Virginia Pollutant Abatement (VPA) and the practices employed under VPA are designed so there is no discharge to state waters.

**Shellfish Aquaculture and the Coastal Zone Management Program (CZM ) Program**

Laura McKay provided a summary of the program. Key points are that this program is authorized to protect coastal resources and promote sustainable uses. They provide coordination among all agencies and programs associated with coastal protection to ensure consistency and oversee funded studies along with a team of stakeholders called the Coastal Policy Team. The program receives funding from the National Oceanic and Atmospheric Administration (NOAA) of about 2.7 million dollars annually. Monies are used to fund the core program but also for special studies like providing technical assistance grants to coastal Planning District Commissions and counties, developing new enforceable policies, buying land for preservation, providing public access, oyster and submerged aquatic vegetation restoration, the Oyster and Seaside Heritage Programs and various studies such as song bird migration along the coastal corridors. Aquaculture funded activities include clam and oyster aquaculture suitability and vulnerability models for Eastern Shore and Gloucester, a cost-benefit analysis of public and private clam and oyster farming, management options for increasing or better use of available subaqueous bottom, policy options for local government ordinances to protect shellfish waters from detrimental land uses and management options for state agencies for protecting water quality to support shellfish farming (e.g. DEQ effort on Shellfish Enhancement Zones). New focal areas funding goes to seaside planning district commissions to study climate change, blue-green infrastructure planning and implementation (could include shellfish aquaculture issues, recreational issues and use conflicts), conservation corridor planning and implementation and alternative septic system impacts. The Coastal Geospatial and Educational Mapping System (GEMS) was described.

**Discussion:** The CZM program has funds available after October '08 if the group identifies additional needs or research to help the rulemaking move forward. This mapping system has information (Baylor grounds, shellfish leases, submerged aquatic vegetation, management areas, land uses, etc...) which could be used to identify the aquaculture enhancement areas. A live version of Coastal GEMS will be shown at the next TAC meeting. The group was reminded that Mark

Luckenbach and Marcia Berman from VIMS were also on the TAC and could provide a lot of help in identifying these areas. Mark Luckenbach has also conducted research on what percent of impervious cover begins to effect water quality. A North Carolina study found that >8% impervious cover impairs aquatic life. We will report on this information at a future TAC meeting.

### **Water Quality Standards Regulation**

Elleanore Daub provided a primer on the water quality standards (WQS) regulation. This regulation forms the center and basis for all water programs and is mandated by several federal and state laws. Three minimum requirements of WQS are to have use designations (e.g. aquatic life, shellfish marketability), recreation (boating, fishing, swimming) and public water supply), criteria to protect those uses (narrative or numerical) and an antidegradation policy. The antidegradation policy has three tiers of water quality protection. Tier 1 is the first tier where waters may be at or below standards. These waters must at a minimum be brought up to standards. Tier 2 waters are better than standards or high quality waters. Most of the waters on the seaside of the Eastern Shore are Tier 2. Tier 3 waters are exceptional waters and must be adopted into the regulation. No new or additional discharges are allowed in Tier 3 waters. Other policies are allowed in WQS regulations such as variances and mixing zones. The WQS regulation also contains special standards that address site specific needs in certain water bodies. One example of a site specific standard is the shellfish waters special standard “a” which applies to all tidal waters. These areas are protected by a very stringent fecal coliform criteria to keep the shellfish marketable and edible.

All water bodies are identified by class, section and special standard in the WQS regulations’ River Basin Section Tables and a map depicting the Eastern Shore water body sections was shown.

The WQS also contain public hearing requirements to determine the socio-economic impact for new discharges (or any project) to shellfish waters. Whenever a new permit application is received, and if it results in a condemnation and a violation of the general standard, the permit must be denied. This is what happened with Captain’s Cove. A memorandum of understanding (MOU) and guidance has been written which describes the relationship between DEQ, VDH and VMRC in deciding whether a public hearing is necessary. The SWCB uses all information gathered to decide whether or not to deny a permit. When a denial appears to be impending, an applicant may always voluntarily make changes to the permit or study the receiving stream to add to the SWCB decision making process or to change the condemnation or the impact on the use.

There is another shellfish related regulation called the Policy for the Protection of Water Quality in Virginia’s Shellfish Growing Areas that reflects the socio-economic hearing requirements and the interaction between state agencies when making decisions about projects in shellfish waters. This regulation was adopted in 1980 and it is unknown exactly why it was needed or what additional requirements it imparts. It may not be needed if shellfish permit procedures are clarified during this rulemaking.

One section of the WQS regulation that was adopted in 2005 was the nutrient related criteria in the Chesapeake Bay and tidal tributaries. This rulemaking enacted five new use designations for the Bay waters and new numerical dissolved oxygen, water clarity, submerged aquatic vegetation acres and chlorophyll “a” criteria. These new standards led to implementation regulations (point source policies) that are resulting in nitrogen and phosphorus removal (and millions of dollars spent) at all significant dischargers. Cape Charles and Onancock are two of those dischargers upgrading in the next couple of years to meet those requirements.

**Discussion:** There were some questions about how the criteria apply statewide (freshwater and salt water). The Bay rulemaking adopted something more like site specific criteria that apply generally in the Bay and tidal tributaries but also in various zones within the water column (shallow, open water, deep channel, etc...). The chlorophyll criteria were narrative in fashion and are expected to be met via implementation of the dissolved oxygen criteria. The James River did not have a dissolved oxygen problem so those nutrient reductions are based on numerical chlorophyll criteria that apply in the various salinity zones of the tidal James. These are very stringent in the 10 -25 µg/l range.

It was unclear to the group how the socio-economic hearing requirements would be weighed by the SWCB in a decision to deny a permit. Socio-economic impacts have only been considered in cases where a DEQ requirement resulted in a drop of median household income to unaffordable levels or where the requirement would take money that the locality needed more to build or upgrade a school, library or some other social or educational necessity. We will be able to provide the TAC information on socio-economic assessments at the next TAC meeting.

### **Shellfish Regulations**

Bob Croonenberghs from the VDH Division of Shellfish Sanitation presented a program overview of public health procedures used to classify (condemn or approve) shellfish growing areas. Shellfish are filter feeders, are often eaten raw or partially cooked and can concentrate pathogenic viruses and bacteria. There are many techniques and data used to classify shellfish areas. Shoreline surveys and sampling are conducted to identify sources (septic systems, discharges, marinas, animals). Sea water sampling is also conducted nearshore and at mid-channel stations. Fecal coliform bacteria are the indicator analyzed for the most part; although other tests are used to identify contaminant presence. Means and percentiles are a running average calculated using the last 30 samples. These values are compared to the fecal coliform water quality standard, which is an indicator of pathogenic organisms. The program is transitioning from a most probable number form of analysis to a direct plating method. These sampling programs are used to classify waters (approved or condemned) based on the concentration of these indicator bacteria. Another type of classification are 'administrative' in nature and are put in place when a sewage discharge or marina is built and are required regardless of the levels of bacteria (viruses may still be present). Some examples of the use of seawater data to establish closed areas and graphs of historical data from the Chincoteague area (geometric means) over time were presented. The graphs showed that most of the stations (except at the Route 175 bridge) always met the geometric mean but concentrations were lowest (3 - 5 range) at the northern most stations (above the Route 175 bridge).

The types of condemnations around waste water treatment facilities were discussed. Prohibited areas are located in the immediate vicinity of the discharge and no relay or harvest of shellfish is allowed. A restricted area surrounds the prohibited area and is a zone of lesser contamination where relay is allowed. Relay means the shellfish are allowed to 'purge' contaminants for a certain amount of time in a designated area before they can be sold for consumption. There are exemptions from the need to prohibit shellfish areas and that is when discharge is either far enough up on the watershed and very small or if the initial discharge is held in a 24-day minimum detention pond (restricted area still needed but smaller). Mathematical models use a discharge rate of fecal coliform input to the estuarine system and a die-off coefficient to calculate transport, dispersion and dilution until it runs to a steady-state condition of coliform concentrations, which is used to establish condemnations. DSS uses either an assumed effluent concentration of 1000 or 400 fecal

coliforms/100 ml and runs model until 1 fecal coliform /100ml is reached (via the model). Marinas are also modeled but the National Shellfish Sanitation Program dictates most of the input variables.

The TAC needs to be concerned about the potential to allow a sewage discharge into a currently condemned area that might improve later in water quality, but can never be reopened once the discharge is in place. Also, placing limitations on new discharges that would not create or increase the size of a shellfish condemnation may have the effect of squeezing new discharges into existing condemned areas, which generally are the worst places for dilution.

There are concerns that may impact condemnations in the future. These include viral contamination in the vicinity of WWTP outfalls that may pose the potential to require the expansion of condemnations in the future and emerging contaminants (*e.g.*, estrogen mimics, antibiotics, etc...).

Other concerns are that shellfish aquaculture is moving from traditionally deep, offshore waters to shallow, near shore waters and these near shore waters are easily impacted by relatively small amounts of rain-induced runoff and small onshore pollution sources. State shellfish programs are limited in the number of stations they can monitor and by water depth for maneuvering boats. The conservative shellfish standard is needed.

**Discussion:** It was unclear how a pond would be able to hold discharges for 24 days with one inlet and outlet. A pond would have to be designed properly to ensure the detention time. The terminology can be confusing (prohibited, restricted, or condemned). The word ‘condemned’ is used in the state Code but not in the NSSP requirements. We are required to follow these closure ‘rules’, including administrative closures (required because of the presence of a discharge or marina) in order to participate in interstate trade of shellfish. Administrative closures are necessary for public health protection because viruses can escape disinfection (ultraviolet disinfection kills viruses better than chlorine). The group may want to make a distinction between closures based on water quality sampling (which can improve and get smaller or go away over time) and administrative closures (which can never go away as long as the discharge remains). The committee should also be concerned with oyster growing in floats which often occur in muddy creeks near shore where one septic tank can contaminate the oysters. On the bayside (*e.g.* Plantation Creek) clam aquaculture occurs in a shallower tidal area and is prone to the same concerns. The placement of clams is primarily dependent on substrate. On the bay, the creeks are too muddy and growing is done on racks. On the seaside, growing is done in bags on the bottom. The water quality standard for fecal coliform used to protect shellfish has been around since the 70’s and no outbreaks of disease have occurred. Condemnations did increase in the mid 1980’s due to a change in policy at the VDH and the use of WQS was strictly enforced and strict adherence to this standard in the future will continue. Several samples (out of the 30 total data set) exceeding the criteria might result in a closure (one bad sample probably would not, *e.g.*, a flock of geese causing one excursion). Although, usually it is the 90<sup>th</sup> percentile value that triggers the closure. Shellfish waters cannot be reopened until the geometric mean and 90<sup>th</sup> percentile both meet the acceptable standard, so it can take several years to remove a condemnation.

### **Water Permit Regulations**

Jim McConathy from the DEQ Tidewater Regional Office described the program. State and federal laws and regulations require that any person (facility) discharging waste water that exceeds water quality standards or interferes with uses of state waters (surface and ground water) must get a permit and meet the requirements of the permit which is designed to protect the waters. The two

types of wastewater permits are Virginia Pollutant Discharge Elimination System (VPDES) and Virginia Pollutant Abatement (VPA). VPDES permits are issued to surface water discharges. There are 1100 individual permits statewide and 120 individual permits on the Eastern Shore.

Another category of VPDES permits are called General Permits and these are adopted as a regulation and the intent is to cover categories of industries that have similar waste water (like seafood processors, single family homes domestic discharges, concrete products industry, etc...). There are 11 General Permit Categories in Virginia that DEQ administers. In addition, DCR administers Municipal Separate Storm Sewer permits (MS4) and construction storm water permits.

VPA permits are designed so that no discharge is to occur. Examples of VPA permits are for biosolids application, confined animal feed lots (hog, cattle), poultry houses.

A map was shown with all the water permitted facilities on the Eastern Shore and a list of all these facilities was given to the TAC.

Of most interest to the TAC discussions is the part of the permitting process that involves analyzing impacts to shellfish waters. Once DEQ receives a completed application or registration statement for a discharge into shellfish waters that application is sent to DSS at VDH and the VMRC. DSS determines if a condemnation is eminent and VMRC comments on the potential and actual shellfish resource. If an application does not look viable in terms of being able to permit the discharge in a shellfish water, we can suggest but not currently require that the applicant look at alternatives to the discharge.

**Discussion:** Since permits for a facility are issued for a 5 year period there was a question on how would that affect this effort. The amendments associated with this rulemaking would be adopted into regulation (not legislation) and as permits are issued and reissued, the requirements of the regulation will be exercised (alternatives analysis, DSS and VMRC review, public hearing, etc...). It answer to a question about how permits are public noticed, individual permits are public noticed. Coverage under a general permit is issued by the board when a completed registration statement is submitted and demonstrates the applicant fits into the General Permit category. Each registration is not public noticed but the general permit regulation is public noticed every 5 years. Coverage of certain specific activities were discussed. In general, agricultural water quality issues are administered by DCR via best management practices and are not covered by VPA permits (this is also true for plasticulture). Crab shedding operations are not covered although a general VPDES permit is available for seafood processing (canning, picking, shucking, curing, freezing, packaging). Septic systems and mass drainfields are administered by the VDH (to be discussed at the next meeting). There are three municipal discharges and one industrial discharge on the bay side that have individual permits but are also covered under a nutrient general permit (Cape Charles, Onancock, Shore Memorial Hospital and Tyson). Perdue has an individual permit.

### **Water Reclamation and Reuse Regulation**

Valerie Rourke of DEQ discussed this program. This regulation is important to this rulemaking because reuse and reclamation is an alternative to discharge. Water reclamation and reuse will be implemented through existing VPDES and VPA Permit Programs. This regulation does not include all types of water reuse. For example, grey water, recycled flow used at the same facility and activities normally covered under other programs do not fall under this regulation (ground water injection covered by an UIC permit from EPA, land treatment systems covered by SCAT

regulations). There are different standards or levels of treatment (Level 1, Level 2) for reclaimed water that must be met before reuse is allowed. There are six different general reuse categories (urban – unrestricted access, irrigation (restricted and unrestricted access), landscape impoundments, construction, industrial) that will require either Level 1 or Level 2 reclaimed water. Some form of nutrient management is also required for certain types of irrigation reuse. The producer of the reclaimed water must apply for a permit. This regulation will be final this year.

Water reuse can be combined with centralized on-site treatment & disposal (i.e., mass drainfields or land treatment) as an alternative to effluent point source discharges. DEQ regulates water reuse and land treatment, while the Virginia Department of Health regulates mass drainfields

Advantages for water reuse include reduced nutrient loads and increased conservation of potable water. Disadvantages are that a reclaimed water distribution system will be expensive, an irrigation reuse will be at much lower rates than for land treatment and it does not include groundwater recharge.

Advantages for land treatment are that it allows higher rates of effluent land application and disposal, it requires less storage and there are no or limited distribution needs or related costs. Disadvantages for land treatment are that it requires ground water monitoring, it must meet the Antidegradation Policy for Ground water and may require coordination with and/or permitting by EPA if considered groundwater injection.

**Discussion:** There were concerns raised about how water reuse and water withdrawal requirements would work together and the impacts of reused water on ground water (particularly that water serving shallow wells).

### **Wrap Up**

The TAC identified several issues to be discussed at future meetings including which waters to place under this aquaculture enhancement designation, how to add waters to that list, what forms of marine aquaculture to include, what additional requirements or changes to permitting are necessary, the sole source aquifer and the hydrological connectivity of all waters on the Eastern Shore. The staff was asked to keep the regulation simple and relevant to the Eastern Shore and to be aware of the multiple community needs that need to coexist including water supply, growth and development and aquaculture. Development and aquaculture can exist together. Some specific items to consider when deciding on waters to place under the designation might be salinity and its effect on oysters vs. clams and undeveloped vs developed areas (perhaps even at full build out). There were some more questions about existing permitting practices in condemned areas.

### **Public Comment**

John Jester – Chincoteague - We are not addressing the entire problem if we ignore water quality issues associated with run-off and the poultry industry. Identify a problem before requiring additional regulations (public health problem).

James McGowan – Director of Planning Accomack – offered his assistance.

### **Handouts distributed at the March meeting :**

Agenda

Copies of slide presentations

List of permitted dischargers on the Eastern shore  
Guidance Memo No. 07-2009 VPDES Permit Applications for Discharges in Shellfish Growing  
Areas  
Excerpts from relevant portions of the WQS  
Policy for the Protection of Water Quality in Virginia's Shellfish Growing Areas